

WHAT IS CLAIMED IS:

- 1 1. A front projection screen comprising:
2 a transparent substrate; and
3 a plurality of opaque reflective regions formed integral to the transparent substrate.
- 1 2. The front projection screen of claim 1 wherein the opaque reflective regions are
2 randomly distributed on said transparent substrate.
- 1 3. The front projection screen of claim 1 wherein a matrix of opaque reflective regions are
2 adhered to a surface of the transparent substrate.
- 1 4. The front projection screen of claim 1 wherein a matrix of opaque reflective regions are
2 formed within the substrate.
- 1 5. The front projection screen of claim 1 further comprising at least one additional
2 transparent substrate adjacent said transparent substrate.
- 1 6. The front projection screen of claim 1 further comprising a non-reflective surface
2 adjacent said transparent substrate.
- 1 7. The front projection screen of claim 1 wherein said plurality of opaque reflective regions
2 are formed from an element selected from the group consisting of reflective spheres, indentations
3 in the transparent substrate having a reflective coating on a surface thereof and a non-reflective
4 material filling said indentation, portions of reflective spheres, reflective irregularly shaped

5 particles, a pattern of lines, dots, graphic shapes, or granules, three-dimensional forms, reflective
6 grooves, Fresnel patterns, extensions from the surface of the substrate, and reflective ridges
7 formed on a surface of said transparent substrate.

1 8. The front projection screen of claim 1, wherein the opaque reflective regions are formed
2 from particles selected from the group consisting of a fine gradation of ground rock, crystal,
3 metal filings, sand, powder, and specially produced three dimensional forms.

1 9. The front projection screen of claim 1, wherein the reflective regions have a back surface
2 that is substantially black and a front surface that is substantially reflective.

1 10. The front projection screen of claim 1, wherein the substrate includes a flat surface
2 containing a pattern of indentations, each indentation having an inner surface covered with a
3 reflective coating and each indentation being filled with an opaque material.

1 11. The front projection screen of claim 1, wherein the opaque reflective regions comprise an
2 array of micro sphere sections incorporated into the screen, each micro sphere section being a
3 pre-determined section of a micro sphere that reflects light from a projector toward the direction
4 of a viewer.

1 12. The front projection screen of claim 1, wherein the opaque reflective regions are in the
2 pattern of a Fresnel lens, which is comprised of grooves of alternating rows of reflective ridges
3 and transparent rows.

1 13. The front projection screen of claim 1, wherein the grooves of the Fresnel lens have a
2 modulated pattern along their long axis.

1 14. The front projection screen of claim 1, wherein the opaque reflective regions comprise
2 less than about 50% of the transparent substrate area.

1 15. The front projection screen of claim 1, wherein a light absorbing black background is
2 positioned behind the transparent substrate.

1 16. The front projection screen of claim 1, wherein an image projected on the front projection
2 screen is viewed in the context of a three dimensional setting that can be seen through the screen.

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1 17. An image projection system for displaying images with a front projection, comprising:
2 a screen comprising a transparent substrate and a plurality of opaque reflective regions
3 formed integral to the transparent substrate; and
4 a projector with placement of the projector in front of the screen and offset from the
5 middle of the screen.

1 18. The image projection system of claim 17, wherein the projector has an acute angle of
2 projection to the screen.

1 19. The image projection system of claim 17 wherein the system has a supporting structure
2 housing the projector when the projector is not in use and storing the screen when the screen is
3 lowered into the supporting structure when the screen is not in use.

1 20. A communications system for allowing a user to communicate with a remote location, the
2 communications system comprising:
3 a screen comprising a transparent substrate and a plurality of opaque reflective regions
4 formed integral to the transparent substrate;
5 a projector with placement of the projector in front of the screen and offset from the
6 middle of the screen;
7 a camera positioned behind the screen;
8 a microphone positioned to receive sounds from a viewing area;
9 speakers positioned to project sound transmitted from a remote location to the viewing
10 area; and
11 transmission equipment receiving signals from the remote location and transmitting to the
12 remote location signals received from the camera and microphone.

1 21. The communications system of claim 20 further comprising a black background behind
2 the screen having an aperture to allow the camera to view a user.

1 22. The communications system of claim 20, wherein the camera is positioned to
2 substantially coincide with an image of a person projected on the screen at eye height of the
3 projected image.

1 23. The communications system of claim 20 wherein the system has a supporting structure
2 housing the projector when the projector is not in use, storing the screen when the screen is
3 lowered into the supporting structure, and housing the camera when the camera is not in use.